

8. The composite cord according to claim 4, wherein the
 B3 metallic filaments do not form a sheath around the core. - -

REMARKS

Claims 1, 2 and 4-8 remain pending after amendment.

Claim Amendments

By this amendment, claim 3 is cancelled and the limitations thereof inserted into claims 1 and 4. Claims 1 and 4 are also amended to recite that the metallic filaments are placed with gaps after the polymer fibers are softened or melted under vulcanization conditions. Support for this amendment resides at page 4, line 33 to page 5, line 1 of the specification as well as at Figures 2A to 2C. New claims 7 and 8 are added directed to a limitation removed from claims 1 and 4. No new matter is added by this amendment.

Applicants' Invention

Applicants' invention is directed to a composite cord having a 1 x n construction where n is an integer from 3 to 12 with from 2 to 11 metallic filaments and from 1 to 5 polymer fibers having a melting point of from 50 °C to 200 °C twisted

together, wherein no fiber constitutes a core of the composite cord. In one embodiment, the metallic filaments do not form a sheath around the core, and the metallic filaments are placed with gaps after the polymer fibers are softened or melted under vulcanization conditions. Preferably, the polymer fiber and metallic filaments are twisted together at approximately constant pitches and displaced from one another in a longitudinal direction.

Applicants' invention also comprises a tire including the above composite core as a reinforcing element.

Applicants' claimed invention is neither disclosed nor suggested by the prior art.

Rejection under 35 USC 102(b)

Claims 1, 2 and 4 stand rejected under 35 USC 102(b) as being anticipated by Starinshak U.S. Patent No. 5,279,695. This rejection respectfully is traversed to the extent deemed to apply to the claims as amended.

In response, the limitations of claim 3 are now inserted into independent claims 1 and 4. The anticipation rejection based on the cited reference is thus without basis and should be withdrawn.

Rejection of Claim 3 under 35 USC 103(a)

Claim 3 stands rejected under 35 USC 103(a) as being unpatentable over Starinshak in view of Nakamura WO 85/02210. This rejection respectfully is traversed to the extent deemed to apply to the claims as amended.

In response, claim 3 is cancelled and the limitations thereof inserted into independent claims 1 and 4. Claims 1 and 4 as now amended neither teach or suggest the claimed invention.

More specifically, Starinshak is directed to a cord comprised of steel filaments having syndiotactic-1,2-polybutadiene (SPBD) dispersed in the interstices between the steel filaments. The SPBD may be incorporated into the interstices of the cord by means of an SPBD filament cabled into the core area of the cord (column 4, lines 46-51).

By contrast, applicants' invention is directed to a composite cord having a 1 x n construction where n is an integer from 3 to 12 with from 2 to 11 metallic filaments and from 1 to 5 polymer fibers (polyethylene or polypropylene fibers) having a melting point of from 50 °C to 200 °C twisted together, wherein no fiber constitutes a core of the composite cord to prevent the metallic filaments from forming a sheath around the core. In a preferred embodiment, the polymer fiber and metallic filaments

are twisted together at approximately constant pitches and displaced from one another in a longitudinal direction.

Applicants' invention is at odds with that of Starinshak. As noted above, Starinshak teaches that the SPBD material can be incorporated into the cord by means of an SPBD filament placed into the core of the cord. However, applicants' claims provide that no fiber constitutes a core of the cord.

The teachings of Nakamura do not cure the deficiencies of Starinshak. Nakamura describes the use of core material that has a lower melting temperature. The reference forms a sheath of metallic filaments around the core, which creates a closed gap between the metallic filaments. The embedding rubber cannot penetrate into the closed gap, which prevents water from entering into the gap. Such teachings are contrary to applicants' invention. Further, one of ordinary skill in the art would not arrive at applicants' invention upon combination of the respective teachings of the two references. Importantly, Starinshak et al requires the use of a rubber material (syndiotactic-1,2-polybutadiene) in the disclosed cables. The use of a non-rubber material such as polyethylene or polypropylene fiber would be inconsistent with the teachings of the reference.

In view of such deficiencies and differences between the claimed invention and the cited prior art, the rejection is without basis and should be withdrawn.

Rejection of Claims 5 and 6 under 35 USC 103(a)

Claims 5 and 6 stand rejected under 35 USC 103(a) as being unpatentable over Starinshak. This rejection respectfully is traversed to the extent deemed to apply to the claims as amended.

The deficiencies of Starinshak are discussed at length above. Given the amendment of claims 1 and 4 to provide for the presence of polyethylene or polypropylene fibers, the cited reference cannot be said to disclose or suggest the claimed invention. The rejection is thus without basis and should be withdrawn.

New Claims 7 and 8

New claims 7 and 8 are directed to a preferred embodiment which previously resided in claims 1 and 4; i.e., where the metallic filaments not form a sheath around the core. This embodiment is neither taught nor suggested by the cited prior art (such as Nakamura which teaches the formation of a sheath by

means of metallic filaments). These claims should accordingly be found to be directed to patentable subject matter.

The application is now believed to be in condition for allowance and an early indication of same is earnestly solicited.

In the event that any outstanding matters remain in this application, Applicants request that the Examiner contact James W. Hellwege (Reg. No. 28,808) at (703) 205-8000 to discuss such matters.

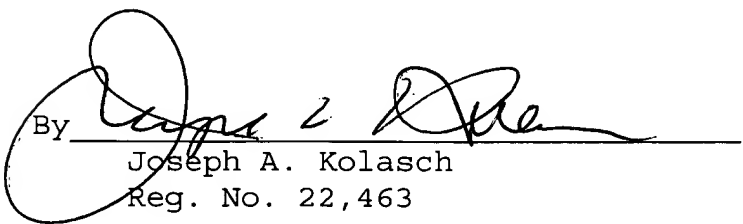
Applicant respectfully petitions under the provisions of 37 CFR 1.136(a) and 1.17 for a one-month extension of time in which to respond to the Examiner's Official Action. The Extension of Time fee in the amount of \$110.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.


Very truly yours,

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CLAIM AMENDMENTS WITH MARKINGS TO SHOW CHANGES

Claim 3 is cancelled.

Claims 1 and 4 are amended as follows:

1. (Twice Amended) A composite cord having a 1 x n construction where n is an integer from 3 to 12 with from 2 to 11 metallic filaments and from 1 to 5 polymer fibers selected from the group consisting of polyethylene fiber and polypropylene fiber having a melting point of from 50 °C to 200 °C twisted together, wherein no fiber constitutes a core of the composite cord [whereby metallic filaments do not form a sheath around the core] and the metallic filaments are placed with gaps after the polymer fibers are softened or melted under vulcanization conditions.

4. (Twice Amended) A pneumatic tire employing for its reinforcing element a composite cord having a 1 x n construction where n is an integer from 3 to 12 with from 2 to 11 metallic filaments and from 1 to 5 polymer fibers selected from the group consisting of polyethylene fiber and polypropylene fiber having a melting point of from 50 °C to 200 °C twisted together, wherein

no fiber constitutes a core of the composite cord [whereby the metallic filaments do not form a sheath around the core] and the metallic filaments are placed with gaps after the polymer fibers are softened or melted under vulcanization conditions.